

**RAY158-50CPR**

1-5/8" RADIAFLEX® RAY Cable, A-series



- RADIAFLEX® functions as a distributed antenna to provide communications in tunnels, mines and large building complexes and is the solution for any application in confined areas.
- Slots in the copper outer conductor allow a controlled portion of the internal RF energy to be radiated into the surrounding environment. Conversely, a signal transmitted near the cable will couple into the slots and be carried along the cable length.
- RADIAFLEX® is used for both one-way and two-way communication systems and because of its broadband capability, a single radiating cable can handle multiple communication systems simultaneously.
- This RADIAFLEX® radiating cable utilize a low-loss cellular polyethylene foam dielectric and a smooth copper outer conductor which offers a superior electrical performance together with good bending properties.

**Features / Benefits**

- Broadband from 30 MHz to 1000 MHz
- Optimized for high frequencies and digital transmission
- Low coupling loss variation
- For tunnel applications

**Technical Features****STRUCTURE**

|                              |                                                                                                                                               |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Cable Type                   | RAY                                                                                                                                           |
| Size                         | 1-5/8                                                                                                                                         |
| Inner Conductor Material     | Corrugated Copper Tube                                                                                                                        |
| Outer Conductor Material     | Overlapping Copper Strip                                                                                                                      |
| Jacket                       | CPR, EN50575 : 2014 + A1:2016 classified cable                                                                                                |
| Jacket Description           | Halogen free, non corrosive, flame and fire retardant, low smoke, polyolefin + flame barrier tape above outer conductor for lowest cable loss |
| Slot Design                  | Groups of slope slots at short intervals                                                                                                      |
| Indication of Slot Alignment | Guides opposite to slots                                                                                                                      |

**MECHANICAL SPECIFICATION**

|                                     |                      |
|-------------------------------------|----------------------|
| Diameter Inner Conductor            | 17.6mm (0.69in)      |
| Diameter Outer Conductor            | 44.2mm (1.74in)      |
| Minimum Bending Radius              | 700mm (28in)         |
| Cable Weight                        | 1.01kg/m (0.68lb/ft) |
| Tensile Force                       | 1,200N (270lb)       |
| Recommended / Maximum Clamp Spacing | 1.5m (5ft)           |
| Minimum Distance to Wall            | 80mm (3.15in)        |

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**ELECTRICAL SPECIFICATION**

|                               |                                        |     |
|-------------------------------|----------------------------------------|-----|
| Impedance                     | 50 +/- 2 $\Omega$                      |     |
| Max. Operating Frequency      | 1,000 MHz                              |     |
| Velocity                      | 90 %                                   |     |
| Capacitance                   | 73pF/m (23.2pF/ft)                     |     |
| Inductance                    | 0.19 $\mu$ H/m (0.058 $\mu$ H/ft)      |     |
| DC-resistance inner conductor | 1.62 $\Omega$ /km (0.49 $\Omega$ /kft) |     |
| DC-resistance outer conductor | 1.47 $\Omega$ /km (0.45 $\Omega$ /kft) |     |
| Stop bands                    | 240-300, 500-590, 750-860              |     |
| Frequency Selection           | 600                                    | 900 |

**TESTING AND ENVIRONMENTAL**

|                          |                                                                                                                                                                                                                                                                                              |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation Temperature    | -40 - 85 °C (-40 - 185°F)                                                                                                                                                                                                                                                                    |
| Installation Temperature | -15 - 60 °C (5 - 140°F)                                                                                                                                                                                                                                                                      |
| Storage Temperature      | -70 - 85 °C (-94 - 185°F)                                                                                                                                                                                                                                                                    |
| Compliance               | Test methods for fire behaviour of cable :<br>IEC 60754-1/-2 smoke emission: halogen free, non corrosive<br>IEC 61034 low smoke<br>IEC 60332-1 flame retardant<br>IEC 60332-3-24 fire retardant<br>UL1666, ASTM E 662, NES711 and NES713<br>CPR: EN50575:2014 + A1:2016 class B2ca s1a d0 a1 |

**ATTENUATION AND COUPLING LOSS**

| Frequency, MHz | Longitudinal Loss, dB/100 m<br>(dB/100 ft) | Coupling Loss 50%, dB | Coupling Loss 95%, dB |
|----------------|--------------------------------------------|-----------------------|-----------------------|
| 75             | 0,56 (0,17)                                | 62 (65)               | 72 (75)               |
| 150            | 0,78 (0,24)                                | 69 (72)               | 80 (83)               |
| 450            | 1,51 (0,46)                                | 64 (67)               | 69 (72)               |
| 870            | 2,85 (0,87)                                | 59 (62)               | 63 (66)               |
| 900            | 3,04 (0,93)                                | 59 (62)               | 63 (66)               |
| 960            | 3,38 (1,03)                                | 58 (60)               | 61 (66)               |

@ 20°C (68°F)

**NOTES**

- Coupling loss as well as longitudinal attenuation of RADIAFLEX® cables are measured by the free space method according to IEC 61196-4.
- Coupling loss values are measured with a radial (below 300 MHz) or orthogonal (above 300 MHz) orientated dipole antenna.
- The coupling loss values given in brackets are average values of all three spatial orientations (radial, parallel and orthogonal) of dipole antenna.
- Coupling loss values are given with a tolerance of +5 dB and longitudinal loss values with a tolerance of +5%. Note: Measured values below nominal are better. They are not limited by any tolerance-range.
- In case of a conflict of operational and stop band, please contact RFS for further assistance.
- As with any radiating cable, the performance in building or tunnel environments may deviate from figures based on free space method.

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**Related Documents**



Construction Products Regulation (CPR) classification and product related information available on RFS webpage.  
Other Documents